

Claims

- [c1] 1. A radiation shielding integrated circuit device comprising:
a x-ray shielding layer for shielding an electronic circuit device from receiving
an amount of x-rays greater than the total dose tolerance of the electronic
circuit device;
a base coupled to the x-ray shielding layer;
a radiation shielding top coupled to the base;
a radiation shielding bottom coupled to the base; and
the electronic circuit device coupled to the x-ray shielding layer;
wherein the electronic circuit device is shielded from receiving an amount of
radiation greater than a total dose tolerance of the electronic circuit device.
- [c2] 2. The radiation shielding integrated circuit device of claim 1 wherein the
radiation shielding top and the x-ray shielding layer are positioned such that
there is no line of sight angle at which the x-rays could reach the integrated
circuit device.
- [c3] 3. The radiation shielding integrated circuit device of claim 1 wherein the x-ray
shielding layer has a first thickness.
- [c4] 4. The radiation shielding integrated circuit device of claim 3 wherein the
radiation shielding top has a second thickness.
- [c5] 5. The radiation shielding integrated circuit device of claim 4 wherein the
second thickness is greater than the first thickness.
- [c6] 6. The radiation shielding integrated circuit device of claim 1 wherein the
radiation shielding top comprises a high Z material.
- [c7] 7. The radiation shielding integrated circuit device of claim 1 wherein the
radiation shielding top comprises a high Z material and a low Z material.
- [c8] 8. The radiation shielding integrated circuit device of claim 1 further comprising
a spacing ring coupled to the radiation shielding top and to the base.
- [c9] 9. The radiation shielding integrated circuit device of claim 8 wherein the

spacing ring comprises a high Z material.

- [c10] 10. The radiation shielding integrated circuit device of claim 8 wherein the spacing ring comprises a low Z material.
- [c11] 11. A method of shielding an integrated circuit device comprising:
forming a radiation shielding top and a radiation shielding bottom to shield the integrated circuit device from receiving an amount of radiation greater than a total dose tolerance of the integrated circuit device;
forming a x-ray shielding layer; and
selecting a thickness for the x-ray shielding layer to shield the integrated circuit device from x-rays such that the integrated circuit device receives an amount of x-rays less than the total dose tolerance of the integrated circuit device.
- [c12] 12. The method of shielding an integrated circuit device according to claim 11 further comprising:
coupling the integrated circuit device to the x-ray shielding layer; and
coupling the radiation shielding top and the x-ray shielding layer to a base such that there is no line of sight angle at which x-rays could reach the integrated circuit device.
- [c13] 13. The method of shielding the integrated circuit device according to claim 11 further comprising forming the radiation shielding top and the radiation shielding bottom from a high Z material.
- [c14] 14. A method of shielding an integrated circuit device comprising:
forming a cavity in a base;
forming a radiation shielding coating layer within the cavity in the base;
coupling the integrated circuit device to the radiation shielding coating layer;
and
coupling a radiation shielding lid to the integrated circuit device package such that there is no line of sight angle at which x-rays could reach the integrated circuit device.
- [c15] 15. The method of shielding the integrated circuit device according to claim 14 further comprising coupling a radiation shielding bottom to the base.

shield the second circuit die from radiation such that there is no line of sight path for the x-rays to the second circuit die.

- [c21] 21. The radiation shielding integrated circuit device of claim 19 further comprising:
a first spacing ring coupled to the radiation shielding top and to the base;
a second spacing ring coupled to the radiation shielding bottom and to the base.
- [c22] 22. The radiation shielding integrated circuit device of claim 21 wherein the first spacing ring and the second spacing ring comprise a high Z material
- [c23] 23. The radiation shielding integrated circuit device of claim 21 wherein the first spacing ring and second spacing ring comprise a low Z material.
- [c24] 24. The radiation shielding integrated circuit device of claim 19 wherein the radiation shielding top and the radiation shielding bottom comprise a high Z material.
- [c25] 25. The radiation shielding integrated circuit device of claim 19 wherein the first electronic circuit device is shielded from receiving an amount of radiation greater than a total dose tolerance of the first electronic circuit device.
- [c26] 26. The radiation shielding integrated circuit device of claim 19 wherein the second electronic circuit device is shielded from receiving an amount of radiation greater than a total dose tolerance of the second electronic circuit device.